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Marlene H. Dortch
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Re: Notice of Ex Parte Letter
Amendment of Part 97 of the Commission's Amateur Radio Service Rules to Permit Greater Flexibility in Data Communications, WT Docket No. 16-239*; New York University Petition for Declaratory Ruling Regarding Amateur Radio Communications,* WT Docket No. 16-239, DA-19-1130 (Nov. 1, 2019)*; Petition for Rulemaking filed by Amateur Radio Station Licensee Ron Kolarik (K0IDT)*, RM-11831; *Petition for Rulemaking filed by the American Radio Relay League, Inc. (ARRL)*, RM-11828 (Feb. 28, 2018); *Petition for Rulemaking filed by the American Radio Relay League, Inc. (ARRL)*, RM-11759 (Jan. 8, 2016); *Petition for Rulemaking filed by the American Radio Relay League, Inc. (ARRL)*, RM-11708 (Nov. 15, 2013).

Dear Ms. Dortch:

This *ex parte* letter is filed on behalf of New York University and is presented to recipients listed in the attachment. On November 4th and 5th, 2019, six representatives of the American Radio Relay League (ARRL) visited FCC officials in WTB, OET, PSHSB, and met with Umair Javed, Legal Advisor to Commissioner Rosenworcel. The visit was a continued attempt by ARRL to advance widely unsupported views within the amateur radio service on its continued advocacy of RM-11828 and WT 16-239/RM-11708.[1]

The ARRL's views, expressed in David R. Siddall's *ex parte* letters of November 7 and 8, 2019, represent the interests of a very tiny minority of the US amateur radio population that presently engage in a dubious and well-documented operation of a private global email service that cannot be monitored for meaning by others over the air. These email operations are prohibited in the HF amateur radio spectrum in most countries around the world[2] and have been shown to carry communications that violate Part 97 rules in the United States while enabling unlicensed users access to the amateur radio service, through the use of effectively encrypted email and file protocols that cannot be intercepted over the air by others, hence defeating the bedrock principals of openness, transparency, and the self-policing policy of amateur radio.

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[1] ARRL ex parte filings of Nov. 2019:
https://ecfsapi.fcc.gov/file/112076052258/ARRL%20FCC%20%20Ex%20Parte%20%20Nov%205%20OET.pdf
https://ecfsapi.fcc.gov/file/111917375490/%20ARRL%20Ex%20Parte%20WTB%20PSHSB%20Nov%204.pdf
https://ecfsapi.fcc.gov/file/1119048807015/ARRL%20FCC%20%20Ex%20Parte%20%20Nov%205%20Javed.pdf

[2] http://www.arrl.org/third-party-operating-agreements
This list of countries with 3rd party traffic agreements for amateur radio does not list most countries, including most developed nations such as France, Germany, Spain, Italy, Japan, India, and South Korea, The absence of a 3rd party agreement prohibits the sending of Winlink email messages from USA amateurs via radio to stations or persons/entities in those countries, except those that are between radio amateurs.

This obscured data transmission capability that the ARRL has promoted for nearly two decades has led to many other FCC rule violations that continue to go unenforced. [3]

The ARRL's *ex parte* filings of November 7 and 8, 2019 continue to ignore vast evidence and testimonials in the record, including the statements of Winlink users and the expert opinions provided by technical experts over the past six years in RM-11708, RM-11828, RM-11831, PSHSB 17-344, RM-11759, and WT Docket No. 16-239. These statements and expert opinions that the ARRL continues to ignore are not just steeped in technical facts showing that Winlink users and other amateur radio operators cannot intercept Winlink data messages over the air for true meaning, but they also show how the effective encryption is leading to other rule violations since the transmissions cannot be self-policed.[4] Furthermore, the ARRL continues to ignore the problem of relying solely on "intent" as the baseline in which to judge if a transmission is obscured or not within Section 97.113(a)4. This issue has been brought up to the Commission and ARRL officials for more than a decade by a wide range of constituents, but has been continually ignored by ARRL, which has

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[3] See, e.g., Reply Comments of Janis Carson, Ron Kolarik, Lee McVey, and Dan White, WT Docket No. 16-239, RM-11708, RM-11759, and RM-11831, at 29-60 (July 19, 2019) (providing extensive evidence in FCC Enforcement Bureau Ticket No. 3184322 that recent e-mails traveling through the Winlink system violate amateur service rules).

See, Letter from Ari Q. Fitzgerald, Counsel to New York University, to Marlene H. Dortch, Secretary, Federal Communications Commission, WT Docket No. 16-239, RM-11831, RM11828, RM-11759, and RM-11708, Attachment at 4-6 (Oct. 8, 2019) (discussing "long standing problems" in the Amateur Radio Service); Reply Comments of Theodore S. Rappaport, N9NB, PS Docket No. 17-344, WT Docket No. 16-239, RM-11708, and RM-11306, at 9-10 (Feb. 10, 2018) (highlighting the longstanding efforts of certain amateur licensees to effectively encrypt communications and advocacy to permit effectively encrypted communications).

See, Letter from Ari Q. Fitzgerald, Counsel to New York University, Theodore S. Rappaport,N9NB, Director, NYU WIRELESS, and Michael J. Marcus, N3JMM, to Marlene H. Dortch, Secretary, Federal Communications Commission, WT Docket No. 16-239, RM-11831, RM11828, RM-11759, RM-11708, at 6 (July 24, 2019).

See, *Petition* of New York University for Declaratory Ruling (filed Oct. 24, 2019) (https://ecfsapi.fcc.gov/file/10242392005642/NYU%20Wireless%20Petition%20for%20Declaratory%20Ruling%20-%2010.24.19.pdf)

[4] See statements by technical leaders who attempted to work in good faith with ARRL and FCC, and admissions that Winlink transmissions cannot be intercepted by meaning for others and lead to violations:
https://www.fcc.gov/ecfs/filing/1052998397105
https://ecfsapi.fcc.gov/file/1040322516387/FCC%20Letter%20RM%2011831%20final.pdf
https://ecfsapi.fcc.gov/file/1032167020169/FCC%20Letter%20RM%2011828.pdf
https://ecfsapi.fcc.gov/file/110731917879/16-239.pdf
https://ecfsapi.fcc.gov/file/10724035705944/NYU%20Ex%20Parte%20Filing%20-%2007.24.19.pdf
https://www.fcc.gov/ecfs/filing/1222718116209
https://ecfsapi.fcc.gov/file/112327925360/McVey_PDR_Comments.pdf
https://ecfsapi.fcc.gov/file/1022041145632/Marcus%20ex%20parte.pdf
https://ecfsapi.fcc.gov/file/109261360912077/%24ADDENDUM9_24_19_ARRLreply.pdf
https://www.fcc.gov/ecfs/filing/1092397015616
https://ecfsapi.fcc.gov/file/10719969503992/FINAL%20VERSION%20Siddall%20reply%20June%2018.pdf
https://ecfsapi.fcc.gov/file/1008135726267/NYU%20Wireless%20Ex%20Parte%20Filing%20-%2010.08.19.pdf
https://ecfsapi.fcc.gov/file/120198934717/PDR%20comment.pdf
https://ecfsapi.fcc.gov/file/10411081336564/RM-11831-Addendum%20to%20Comments.pdf

instead continued to advocate for an amateur radio service that renders the spirit of transparency and openness "toothless" while creating a perpetual inability for radio hams to self-police the amateur radio spectrum whenever a party implements a new digital mode that would just so happen to provide an expectation of privacy or provide a closed network that runs afoul of the stated purpose of the hobby. The ARRL further has ignored experts and public opinion that has voiced concern for how the amateur radio service can or should be used to serve the future of our country[5].

ARRL has a membership that represents less than 20% of the US amateur radio population, and yet it continues to ignore the majority of US amateurs and its own members who oppose its views. ARRL continues to show its strong bias and advocacy for usage of the amateur spectrum that violates the bedrock principles of openness and transparency, which in turn prevents self-policing and leads to documented rule violations and potential security risks for America. In its *ex parte* filing of November 7 and 8, 2019, ARRL representatives have again advocated for the use of effectively encrypted email that cannot be listened in for meaning by others, have advocated for a massive expansion of this type of dubious activity through RM-11828 which would allow up to 385,000 inexperienced operators to have private HF email and effectively encrypted data privileges overnight, while ignoring the six key points voted upon by its *own* elected Board of Directors in July 2019.[6]

The ARRL continually fails to address the public outcry of concern and the mounting technical evidence provided by acclaimed technical leaders such as former presidents of the IEEE Communications Society[7], inventors and technical leaders from some of the largest American companies as well as the pioneers of digital modes in today's global cellphone and Wi-Fi technologies[8], leading academics and high school teachers[9], leading former military officials[10], young amateur radio operators (including the 2018 Young Ham of the Year) who represent the future of the amateur radio service and the STEM movement in the United States[11], the views of major US engineering companies that rely on amateur radio to provide a

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[5] Popular press articles include: https://spectrum.ieee.org/tech-talk/telecom/wireless/is-ham-radio-a-hobby-a-utilityor-both-a-battle-over-spectrum-heats-up
https://www.theregister.co.uk/2019/04/05/amateur_radio_spectrum/
https://www.edn.com/electronics-blogs/anablog/4461799/Engineers-need-to-preserve-amateur-radio-growth-and-transparency
https://www.rrmediagroup.com/News/NewsDetails/NewsID/17804

[6] ARRL Board Meeting minutes, July 2019 (see item 31, pp. 16-18):
http://www.arrl.org/files/file/2019%20Board%20of%20Directors/Final%20Minutes%20July%202019.pdf

[7] https://www.fcc.gov/ecfs/filing/111004107338

[8] https://www.fcc.gov/ecfs/filing/11100151902444
https://www.fcc.gov/ecfs/filing/10422311615904
https://ecfsapi.fcc.gov/file/11170346002261/FCC%20letter%20RM-11831%20WT%20Docket%20No.%2016-239%20%20Nov%2016%202019%20NRS.pdf
https://ecfsapi.fcc.gov/file/1105032519711/FCC%2016-239%20comments.txt
https://www.fcc.gov/ecfs/filing/10810783211504

[9] https://ecfsapi.fcc.gov/file/1112946714315/Zoya-HAM.pdf
https://ecfsapi.fcc.gov/file/104252430731053/RM-11831.pdf
https://ecfsapi.fcc.gov/file/122042641529/FCC%20NPRM%2016-239.pdf
https://www.fcc.gov/ecfs/filing/104100808304256

[10] https://www.fcc.gov/ecfs/filing/10606634021673

[11] https://www.fcc.gov/ecfs/filing/106131325027415
https://ecfsapi.fcc.gov/file/1113230114751/Sullaway%2C%20Martin%20Comments%20on%20NYU%20Petition.pdf
https://www.fcc.gov/ecfs/filing/10701053267533

source of young technical talent in our country[12], and many other active and astute amateur operators who have given careful consideration to the issues at hand[13].

ARRL, in its representation to the FCC this month, has instead chosen to rely only on the carefully staged experiments and conditional claims of Mr. Gibby, Mr. Huggins, and Mr. Helfert, *none of which* have proven any capability that allows other amateur operators or the general public to decode Winlink data transmissions for ordinary meaning during normal propagation conditions, at sites that are not close to either the transmitting or receiving location. In fact, Mr. Helfert has admitted to the FCC that Pactor/Winlink modes cannot be decoded, directly in contrast with other data modes used today in amateur radio, when he discusses the problems with eavesdropping by a non-linked station[14]: "**Missing data in the received data stream thus (with current technology) leads to an abort of decoding when a single bit error occurs.**"

As shown by Nelson Sollenberger's expert technical report (discussed subsequently), ARRL has disingenuously avoided telling the FCC that the approach it relied upon, those used by Mr. Gibby and Mr. Huggins to show possible decoding of Winlink digital modes such as Pactor, were based on *very carefully crafted experiments that provide zero-fading or highly favorable/unusual propagation conditions* (e.g. near perfect channel conditions), and that the dynamic compression methods used by Winlink *provide obscured messages to anyone other than the two linked stations when attempting to decode for meaning in ordinary propagation conditions.* This is contrary to the open, static compression methods used by other modern digital modes used in amateur radio, such as FT-8 and FT-4. (*See*, NYU's Petition for Declaratory Ruling, DA-19-1130). The Commission should also be aware that none of the experimenters cited by ARRL, nor anyone else in the record, have demonstrated Winlink over-the-air monitoring by non-linked stations in ordinary HF fading conditions whenever Pactor, VARA, ARDOP, or Winmor are used. It is nearly impossible to do.

The expert technical analysis provided by Nelson Sollenberger, a highly accomplished modern digital data expert and modem designer who is an IEEE Fellow, an AT&T Fellow, and a Broadcom Fellow (*See*, https://ecfsapi.fcc.gov/file/11170346002261/FCC%20letter%20RM-11831%20WT%20Docket%20No.%2016-239%20%20Nov%2016%202019%20NRS.pdf) shows clearly and in great detail how the ARRL is wrong when it "claims" to offer proper documentation of "CLOVER, G-TOR, and PacTOR codes" on its own website. Mr. Sollenberger proves that the available documentation of PACTOR 2, 3, and 4, even when considering all that has been provided to the ITU and made available publicly on the world wide web through all sources, is not at all sufficient to enable one skilled in the art to decode the Winlink data signals over the air for meaning. This fact is also clear when reading Mr. Helfert's

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https://www.fcc.gov/ecfs/filing/106251069711334
https://ecfsapi.fcc.gov/file/110872946237/16-239.pdf
[12] https://ecfsapi.fcc.gov/file/10611069028797/ACB%20HAM%20Letter%20to%20FCC.pdf
https://www.fcc.gov/ecfs/filing/12010899615569
https://www.fcc.gov/ecfs/filing/10610488708882
https://www.fcc.gov/ecfs/filing/1060770555189
[13] https://www.fcc.gov/ecfs/filing/10625528206372
https://www.fcc.gov/ecfs/filing/1108050117077
https://www.fcc.gov/ecfs/filing/11071442028413
https://www.fcc.gov/ecfs/filing/110747756115
https://www.fcc.gov/ecfs/filing/1105244782730
https://ecfsapi.fcc.gov/file/1103182882861/KC4RAN%20DA%2019-1130%2011-02-2019.pdf
https://www.fcc.gov/ecfs/filing/1071315979048
https://www.fcc.gov/ecfs/filing/107131256626229
https://www.fcc.gov/ecfs/filing/10606109321772
https://www.fcc.gov/ecfs/filing/10409195587811
[14] https://ecfsapi.fcc.gov/file/1023062667841/SCS_letter_ScotStone_FCC_22102019_1.pdf

email letter to Scot Stone of WTB in June 2018 (which was mysteriously made public at the FCC ECFS website five months later on Nov. 7, 2018) that SCS maintains certain trade secrets about its Pactor modulations.

Mr. Sollenberger's expert opinion dissects and exposes the fallacy of the claims made by ARRL in their ex parte filings. Mr. Sollenberger concludes **"…Winlink transmissions are nearly impossible to intercept,…"** Mr. Sollenberger further concludes that the current state of effective encryption can easily be cured merely with a software update if ARSFI/Winlink adopted static compression (the same compression method used by today's modern digital signaling methods). He further states that his findings " are not intended to stand in the way of such innovation nor to hinder emergency services, but are intended to improve clarity on the current status of relevant technical and transparency issues; to provide some paths to correct problems of compliance; and to achieve spectrum allocations in the public interest." Sollenberger's analysis supports the strong outcry by a large body of technical leaders, educators, innvoators, and amateur radio operators in general, when he urges the Commission to adopt the RM-11831, and urges the Commission to clarify Sec. 97.113(a)4 by adopting the Petition for Declaratory Ruling by NYU. He also points out that Pactor 4 implements Spread Spectrum (SS), a modulation and multiple access method prohibited by FCC Part 97 rules. Like so many other technical leaders, educators, young amateurs, and others, he further urges that the Commission reject WT Docket No. 16-239.

ARRL's suggestion that FCC language must mirror ITU regulations, verbatim, as a requirement to comply with ITU treaty organizations, and that no modification of FCC regulations (e.g. Sec. 97.113(a)4) should be done until or unless an ITU modification is first made, is incorrect. Firstly, most countries in the world presently prohibit the use of ARSFI/Winlink data modes in their own amateur radio frequencies, since a vast number of governments interpret the ITU language to explicitly prohibit the use of data modes that obscure the meaning of the transmissions to others who would attempt to listen in (such as those used by ARSFI/Winlink Global email). Secondly, many countries use their own language, either modified through translation or through a government's own further clarification and interpretation, that does not mirror, verbatim, the language used in ITU regulations. Finally, while FCC must comply with the treaty obligations imposed by the ITU Radio Regulations, it often does not implement every provision for use in the US and can impose tighter requirements than the minimum required by ITU. ARRL's suggestion that the FCC is powerless to clarify Sec. 97.113(a)4, which is based on 24 year old language written when only the single, open-source, version of PacTOR existed in the amateur radio service, is uninformed about the misunderstandings of this vaguely wording provision due to both technological advances since it was adopted, and amateur radio practices which were not and could not be addressed in the original deliberations

So many technical experts in the record have explained, time and again to both the ARRL and FCC that Winlink uses decades-old technology that could easily be made to conform to the basic tenets of amateur radio – through the use of unobscured transmissions that can be readily monitored by others over the air – by simply abolishing its use of a dynamic compression table and issuing a software update and the use of a published static compression scheme. Simple clarification of 97.113(a)4 would not hamper further digital communication progress in amateur radio nor would it decrease capabilities in amateur radio in any way. Rather, adoption of the NYU petition for declaratory ruling and adoption of RM-11831 would comply with the six key points mandated by vote for Item 31 in the July 2019 ARRL Board of Directors meeting, would comply with the basic tenets of the hobby, and would fix the "toothless" language and "no intent to obscure – wink wink" loophole that prevents self-policing that some at ARRL and ARSFI/Winlink continue to seek, despite long-standing and well documented opposition over the past two decades.

The FCC must consider the totality of the record of these proceedings, and the FCC should take swift action to ensure the bedrock principles of transparency and openness of all data transmissions are clarified and upheld, so that self-policing can occur, while bringing violators and digital innovators in line with today's

ultra-efficient and modern digital modulations that use static, public, documented compression that allow others to implement, improve, and learn (e.g. FT-8, FT-4, PSK31, and a wide range of other popular digital modes).

ARRL has not provided any expert opinion citing why an immediate granting of extensive HF data privileges would help STEM, yet the vast number of comments by experts, companies, and rank-and-file amateur operators have clearly stated why such a move would be detrimental to the amateur radio service, particularly in light of the lack of enforcement capabilities at the FCC, the current problem of effectively encrypted data transmissions that obscure the message for meaning, and the need for technical competency in the amateur radio service. Many commenters have accused ARRL of trying to dummy down the hobby in an effort to increase ARRL membership rolls and curry support in ARRL with greater privileges at a lower barrier to entry. Many claim that the ARRL's views on RM-11828 are lockstep with their desire to perpetuate widespread use of private email with effectively encrypted messages which are virtually impossible to intercept for meaning over the air, creating a sort of common carrier using free HF spectrum in the amateur radio service.

Without first addressing the issues voted upon by the ARRL Board of Directors in July 2019, and addressing the NYU declaratory ruling which will clarify FCC's intent for self-policing and transparency in Section 97.113(a)4 (as well as the other rules which are violated today because of the lack of ability to listen in), along with the protection of narrowband modes sought in RM-11831, RM-11828 will damage the amateur radio service by perpetuating vastly more illegal email operations, and with more access of the HF amateur radio spectrum to unlicensed or improperly trained users.

Many amateur operators have commented in these proceedings, offering evidence and technical arguments that directly oppose the ARRL's views on RM-11828 and WT 16-239. The views of the ARRL in these proceedings are flawed and should be discounted in light of the vast number of technical experts, educators, leaders, companies, and youth who have provided inputs to the Commission. The ARRL's long-standing aggression and intransigence on these two matters can be traced to RM-11306 and the 2003 ARRL Ad-Hoc HF digital committee, when the technical expertise of Peter Martinez (inventor of the pioneering digital mode AMTOR) and Skip Teller (the inventor of the panoramic PSK31 transceiver leading to Digipan software, and the 2000 Doug Demaw Technical Excellence Award winner) were ignored and bullied by ARRL leadership and the founding fathers of Winlink (See, for example, https://ecfsapi.fcc.gov/file/6518315074.pdf, https://ecfsapi.fcc.gov/file/6518318878.pdf). Let's end this.

I ask the Commission to carefully review the record and consider the wisdom and technical acumen of so many engineering leaders, experts, educators, and pioneers who have provided analysis, opinions, and expertise that directly counter ARRL's and ARSFI's claims and views on WT Docket No. 16-239 and RM-11828. Please follow the advice of so many who have made important technical contributions and who were inspired by amateur radio to lead our country in so many fields. Please read the hopes expressed by the young amateur radio operators who represent the future of our hobby and our country. Preserve the virtue of the amateur radio service by clarifying its stated purpose for our country. Enact NYU's petition for declaratory ruling, Enact RM-11831, and reject RM-11828 and WT Docket No. 16-239 in their entirety.

Sincerely,

Theodore S. Rappaport
David Lee/Ernst Weber Chair
Founding Director, NYU WIRELESS

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